



Thanks for purchasing *Lightning V2* battery discharge/equalizing system.  
Please read through this menu carefully before use.

## Warning Notes

- Do not discharge battery other than NiCd / NiMH.
- Avoid contacting water or any other liquid
- Do not reverse the power input terminal
- Do not use on carpet
- Do not put **Lightning V2** on top of any machinery
- Only put **Lightning V2** on top of flat and clear surface without obstruction to the cooling fan
- Do not leave **Lightning V2** without supervision during discharge
- Only discharge 1-6 serially connected cells
- Never use power supply over 13.8VDC.
- Do not use **Lightning V2** if the internal cooling fan is out of order
- Do not move **Lightning V2** during operation and avoid putting finger under it
- Always put **Lightning V2** in the packaging box to protect it when not in use

## Introduction

After the successful development of the Lightning discharge/equalizing system, **TEAMWAVE** now brings it to the next level – the **Lightning V2**. On top of the proven features in **Lightning**, 20Amp pulse discharge and 0.00V dead short mode is introduced in **Lightning V2**.

With the increasing capacity and lower internal resistance of today's battery, higher discharge current is desired. Traditional 30Amp resistor or light bulb based discharger can discharge battery quickly but will also make it very hot and lead to a longer cooling period before next charge. Also, these resistor/light bulb based discharger do not have cut off features and will eventually bring cells down to 0.00V and may permanently damage the battery. A closer eye is needed to monitor the dimming of the bulb (and needless to say, you can't cut off cell individually). Some 30/35 amp pulse discharge systems are introduced to solve the heat problem. Since 30/35Amp will put high stress on battery as well as the discharging circuitry, those systems need to use shorter discharge and longer rest cycle to relief the stress, rendering the long discharge time issue unsolved. **Lightning V2** takes a balance among these factors and adopts a 20Amp pulse discharge algorithm. A fully charged 4200mAh battery (~4400mAh) can be discharged to 0.9V per cell in about 1 hour, which is twice faster than existing 30Amp/35Amp pulse discharge systems. Battery temperature can also be kept lower to minimize the damage to it.

Battery like East Power and Intellect have to be 30% to 50% (1000mAh – 2000mAh) charged before storage and must not be discharged below certain voltage level. A quick and safe discharge and equalizing system is desired on race day to get the batteries ready for use. **Lightning V2** is definitely the choice – Its 20Amp pulse discharge feature can bring the cells down to the cut off voltage quickly and safely. Since equalization cannot be accurately achieved under large discharge current, **Lightning V2** will automatically switch to the varying discharge current mode after the 20Amp pulse discharge. It's all done with only a press on the enter button – pulse discharge -> varying current discharge -> hold at cut off voltage -> individual cut off, simple and easy! Racers who like dead shorting their batteries can also benefit from the 0.00V dead short mode in **Lightning V2**.

**Lightning V2** is a professional NiCd / NiMH battery discharge and equalizing system developed by **TEAMWAVE**. After years of research and development, **TEAMWAVE** successfully developed Isolated Cell Discharge & Monitoring circuitry (I.C.D.M.) and Adaptive Current Control System (A.C.C.S). With the introduction of these state-of-the-art technologies, serious racers can now enjoy precise voltage cut off, individual cell voltage monitoring and varying discharge current in one compact unit.

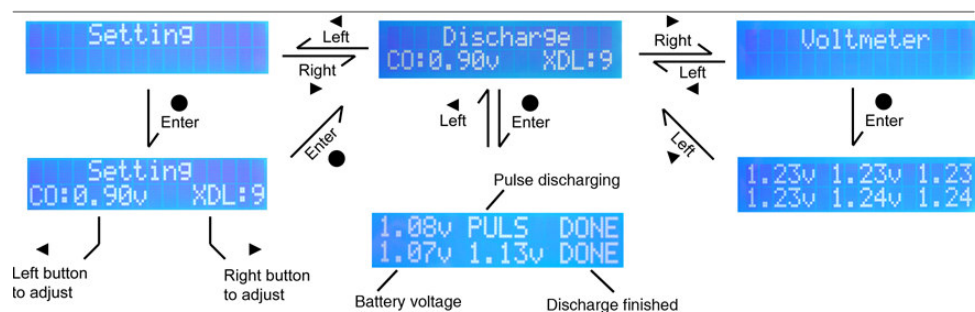
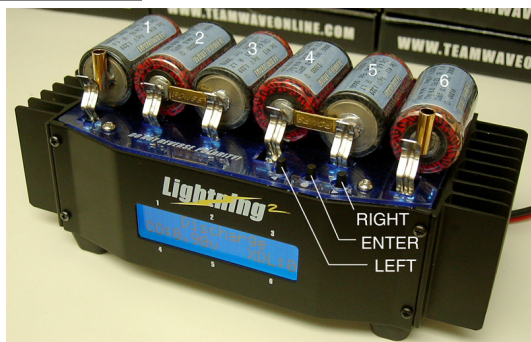
A.C.C.S. can automatically adjust the discharge current according to battery conditions and user preset cut off voltage. The system will start with the maximum possible discharge current (~8A depending on battery condition). When cut-off voltage (User select from 0.0V, 0.70V to 1.20V in 0.01V increment) is reached, the system will automatically lower the discharge current so as to maintain the cell voltage at the desired cut-off level and let the discharge process to continue.

I.C.D.M. allows the system to discharge and monitor each cell individually. High precision A/D converter is used to read cell voltage and each cell is discharged through a pair of high power transistor. Each cell has its own discharge circuit which is powered by the cell itself and it is optically isolated from the rest of the circuit.

## Features

- \*Adaptive Current Control System (A.C.C.S.)
- \*Isolated Cell Discharge & Monitoring Circuit (I.C.D.M.)
- \*eXtended discharge level (XDL)
- \*Individual cell voltage display
- \*Individual cell cutoff
- \*2x16 Blue LCD with white character
- \*20Amp pulse discharge
- \*1.0A - 8.0A discharge current (A.C.C.S.)
- \*0.0V (fixed) / 0.70V-1.20V cutoff voltage adjustment (0.01V increment)
- \*High power 12V internal cooling fan
- \*Build-in voltmeter function
- \*1 - 6 cells discharge capacity
- \*Battery reverse alarm
- \*Non polar power supply design

## Operation



**Lightning V2** menu can be navigated using three buttons: Left (◀), Enter (●) and Right (▶).

“Discharge” menu appears when **Lightning V2** is powered up. Pressing “Enter (●)” button twice will start the discharge process using the displayed setting. Pressing “Left (◀)” button and “Right (▶)” button brings “Setting” and “Voltmeter” menu respectively. By pressing the “Enter (●)” button in “Setting” menu, cut off voltage and extended discharge level can be adjusted. Press “Enter (●)” to save the settings and return to the “Discharge” menu automatically. By pressing the “Enter (●)” button in “Voltmeter” menu, individual cell voltage is displayed. Pressing “Left (◀)” button during Discharge / Voltmeter mode will terminate the process and return to the “Discharge” menu.

Cutoff voltage can be set at 0.0V or adjusted between 0.7V and 1.2V. It may take longer time to bring cells down to lower cut off voltage. XDL is adjustable from 0-9. Higher value means deeper discharge (use smaller discharge current). Normally speaking, pack will feel punchier using lower XDL. Higher XDL will give longer runtime, battery life and a more equalized pack.

## Specifications

Dimensions.....	180 x 75 x 85 mm
Weight.....	390 gram
No. of cells.....	1 - 6
Discharge current.....	20Amp individual pulse 1-8A linear (Auto)
Cutoff voltage.....	0.0V; 0.70-1.20V (Adjustable)
Extended discharge level.....	0 - 9
Operating voltage.....	12VDC
LCD.....	2x16 Blue LCD, white character
Fan.....	12V internal cooling fan

## Customer service / repair

### Defective Returns

If the item you wish to return is inoperable, but has no apparent damage, it is considered defective. Defective merchandise should be returned directly to the manufacturer for warranty repair or replacement, please contact [support@teamwaveonline.com](mailto:support@teamwaveonline.com) before sending back to us. Shipping cost will be charged and the rate is country dependent

## Warranty

Wave Electronics Limited guarantees the **Lightning V2** to be free from defects in materials and workmanship for a period of 60 days from original date of purchase (verified by dated, itemized sales receipt). Warranty does not cover incorrect installation, components worn by use or excessive force, exceeding the recommended input voltage, physical damage resulting from dropping of the unit, or from improper transportation/storage, disassembling the case, tampering with the internal electronics, allowing water, moisture, or any other foreign materials to enter the unit. Any damage of the LCD and the internal cooling fan is not covered. We reserve the right to modify the provisions stated in this warranty without notice. Since we cannot supervise the proper use of our product, no liability is accepted for direct or indirect damage of any type arising from their use or occurring to the property of the user and/or third party. We have tight quality control and each **Lightning V2** is thoroughly tested before leaving our factory, and is therefore considered operational. By the act of connecting/operating this product, the user accepts all resulting liability. No warranty is made regarding the capacity, voltage and life of the battery discharged by **Lightning V2**. **Lightning V2** is not a measurement device, accuracy of the displayed values are not guaranteed.

*TEAM WAVE is a brand under Wave Electronics Limited.*